

CLAIMS

1. A method for mounting an automotive window glass by which a window glass, which is held at a window glass holding member provided at a tip of an attitude-adjustable robot arm, and which is at least curved in the crosswise direction corresponding to the width direction of a body of an automobile, is positioned on a window glass mounting opening provided on the body of the automobile, and is mounted onto a window glass mounting surface on the circumference of the window glass mounting opening, comprising the steps of:

moving the window glass to just above the window glass mounting opening according to a mounting position on the window glass mounting surface by driving and controlling the robot arm;

irradiating both the ends approximately at the same position as each other at least in the crosswise direction of the window glass with a slit laser beam from upward at an angle with regard to the perpendicular direction to the surface of the window glass held at the window glass holding member across the right and the left ends of the window glass, the window glass mounting surface and a surface of the body at a position which is higher than that of the window glass mounting surface outside the window glass mounting surface;

photographing bent laser beams, which are formed, using the slit laser beams irradiated across the right and

left ends of the window glass, the window glass mounting surface and the surface of the body, the beams being formed by clearances in the perpendicular direction to the surface of the window glass, approximately in the perpendicular direction to the surface of the window glass at the right and left ends of the window glass;

calculating, at least, a difference between the clearances, in the perpendicular direction to the surface of the window glass, between the right and left ends of the window glass and the surface of the body based on a predetermined processed image generated by image processing of photographed images of the laser beams, and calculating a rotation amount in a rotation direction around the perpendicular direction to the surface of the window glass, wherein the rotation amount is required to be adjusted in such a way that the calculated difference between the clearances becomes zero;

rotation adjusting the window glass held at the window glass holding member by driving and controlling the robot arm according to the rotation amount calculated; and

mounting the window glass, which has been rotation adjusted, onto the window glass mounting surface by pressing the window glass onto the window glass mounting surface in the perpendicular direction to the surface of the window glass.

2. The method for mounting an automotive window glass according to claim 1, comprising

a step of mounting the window glass onto the window glass mounting surface by calculating a moving distance, which is in the pressing direction of the window glass, and is required for appropriate pressing of the right and left ends of the window glass onto the window glass mounting surface at the mounting positions, using the clearances in the perpendicular direction to the window glass between the right and left ends of the window glass and the surface of the body, which have been calculated, and moving the window glass by driving and controlling the robot arm, based on the moving distance calculated, and pressing onto the window glass mounting surface at a mounting position in the perpendicular direction to the surface of the window glass.

3. A device for mounting an automotive window glass by which a window glass, which is held at a tip of an attitude-adjustable robot arm, and which is at least curved in the crosswise direction corresponding to the width direction of a body of an automobile, is positioned on a window glass mounting opening provided on the body of the automobile, and is mounted onto a window glass mounting surface on the circumference of the window glass mounting opening, comprising:

a robot control unit for moving the window glass to just above the window glass mounting opening according to a mounting position on the window glass mounting surface by driving and controlling the robot arm;

a pair of slit laser beam irradiating units for irradiating both the ends approximately at the same position as each other at least in the crosswise direction of the window glass with a slit laser beam from upward at an angle with regard to the perpendicular direction to the surface of the window glass held at the window glass holding member across the right and the left ends of the window glass, the window glass mounting surface and a surface of the body at a position which is higher than that of the window glass mounting surface outside the window glass mounting surface;

a pair of photographing units for photographing bent laser beams, which are formed, using the slit laser beams irradiated across the right and left ends of the window glass, the window glass mounting surface and the surface of the body, the beams being formed by clearances in the perpendicular direction to the surface of the window glass, approximately in the perpendicular direction to the surface of the window glass at the right and left ends of the window glass;

an image processing unit for generating a predetermined processed image by image processing of images of the laser beams, which have been photographed by the photographing unit;

a calculating unit for calculating, at least, a difference between the clearances, in the perpendicular direction to the surface of the window glass, between the

right and left ends of the window glass and the surface of the body based on the processed image generated by the image processing unit, and for calculating a rotation amount in a rotation direction around the perpendicular direction to the surface of the window glass, wherein the rotation amount is required to be adjusted in such a way that the calculated difference between the clearances becomes zero;

wherein rotation adjustment of the window glass held at the window glass holding member is performed by driving and controlling the robot arm according to the rotation amount calculated, and the window glass, which has been rotation adjusted, is mounted onto the window glass mounting surface by pressing the window glass onto the window glass mounting surface in the perpendicular direction to the surface of the window glass.

4. The device for mounting an automotive window glass according to claim 3,

wherein the window glass is mounted onto the window glass mounting surface by calculating a moving distance, which is in the pressing direction of the window glass, and is required for appropriate pressing of the right and left ends of the window glass onto the window glass mounting surface at the mounting positions, using the clearances in the perpendicular direction to the window glass between the right and left ends of the window glass and the surface of the body, which have been calculated by

the calculating unit, and the window glass is moved by driving the robot arm under control of the robot control unit, based on the moving distance calculated and is pressed onto the window glass mounting surface at a
5 mounting position in the perpendicular direction to the surface of the window glass.